Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
The Effect of Foreign Mobile Termination Rates on U.S. Customers	)	IB Docket No. 04-398
	)	

NOTICE OF INQUIRY

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By the Commission: Commissioner Copps issuing a statement.

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I. INTRODUCTION

1. In this Notice of Inquiry (*NOI*), we fulfill our commitment in our *ISP Reform Order* to develop a record on foreign mobile termination rates. This *NOI* also seeks to inquire whether U.S. customers have adequate information and alternatives with regard to foreign mobile termination rates and surcharges, and whether such charges raise consumer concerns.[1] To that end, we solicit data, information, comments, and analyses on mobile termination arrangements and foreign mobile termination rates and on actions taken by foreign national regulatory authorities with respect to these rates. We also seek comment on the impact of these rates and actions on competition in the U.S.-international telecommunications market and, in particular, on U.S. telecommunications services customers. The record developed in this proceeding should help us assess properly foreign mobile termination rates and their effect on U.S. customers and competition in the U.S.-international telecommunications services market.[2]

2. We first present an overview of and seek comment on foreign mobile termination rate payment flows and the relevant regulatory regimes. We then seek input, analyses, and comments on the concerns raised by parties in the *ISP Reform* proceeding[3] and on actions taken by foreign national regulatory authorities to address mobile termination rates within their respective jurisdictions. We ask for factual information and data on foreign mobile termination rates.[4] Finally, we seek comment on the appropriate framework by which we can analyze whether foreign mobile termination rates are unreasonably high.

II. BACKGROUND

3. U.S. international carriers generally do not correspond directly with foreign mobile operators. Rather, they negotiate for mobile termination through a foreign fixed carrier.[5] Calls that originate in the United States and that are bound for foreign mobile networks are generally sent to a foreign fixed carrier in the destination country, which then transmits the calls to the foreign mobile network operator. The mobile network operator may or may not be affiliated with the foreign fixed carrier.[6] The manner in which payments flow between carriers depends upon whether the destination

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[1] *International Settlements Policy Reform, International Settlement Rates*, IB Docket Nos. 02-324 & 96-261, First Report and Order, FCC 04-53, 19 FCC Rcd 5709, 5749-751, ¶¶ 90-91 (2004) (*ISP Reform Order*).

[2] *See id.* at 5749-740, ¶ 90.

[3] A list of parties that filed comments in the *ISP Reform* proceeding is set forth in Appendix A of this *NOI*.

[4] The data and information contained in this *NOI* are based upon data and information provided by members of industry, the comments we received in the ISP proceeding, and information that Commission staff gathered from publicly available sources.

[5] *International Settlements Policy Reform, International Settlement Rates*, IB Docket Nos. 02-324 & 96-261, Notice of Proposed Rulemaking, FCC 02-285, 17 FCC Rcd 19954, 19979, ¶ 45-46 (2002) (*ISP Reform NPRM*); *ISP Reform Order*, 19 FCC Rcd at 5749, ¶ 87. Letter from Scott A. Schefferman, Associate Counsel, MCI to Marlene Dortch, Secretary, FCC, at 1 (Mar. 3, 2004); *see also* Verizon Reply at 7.

[6] *See, e.g.*, KPN Reply at 7; Sprint Comments at 18-19; C&W Comments at 18.; Letter from James J.R. Talbot, Senior Attorney, to Marlene H. Dortch, Secretary, FCC, at 7, n. 35 (Feb. 18, 2004) (AT&T Feb. 18 *Ex Parte* Letter) ("Foreign international carriers have mobile affiliates in virtually all countries where AT&T pays mobile surcharges. In forty of those countries, mobile carriers affiliated with AT&T's international correspondents have (continued....)

country follows a calling-party-pays (CPP) or receiving-party-pays (RPP) regime.

4. In countries that follow the CPP regime, the calling party's network operator generally pays a call termination fee to the mobile network operator that terminates the call.[7] In the case of a fixed call from the United States to a foreign mobile network in a country that follows the CPP regime, the charges attributed to termination on a foreign mobile network, generally, are as follows: the foreign mobile network operator charges the foreign fixed carrier a mobile termination rate;[8] the foreign fixed carrier charges the U.S. international carrier a mobile settlements rate;[9] the U.S. carrier, in turn, charges U.S. customers a mobile surcharge.[10] By contrast, in countries with an RPP regime, the mobile network operator collects termination charges from the mobile subscriber with some charges collected from the caller's fixed network.[11]

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market shares totaling 50 percent or more, including many of the countries where AT&T pays the highest mobile surcharges . . .").

[7] *See Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions with respect to Commercial Mobile Services*, Seventh Report, 17 FCC Rcd 12985, 13037 (2003) ("the originating wireline carrier pays an interconnection charge to terminate traffic on the mobile operator's network, and separately bills the charges incurred by its own customers based on published per-minute rates for fixed-to-mobile calls"); Gregory J. Sidak and Robert Crandall, *Should Regulators Set Rates to Terminate Calls on Mobile Networks?*, 21 Yale J. on Reg. 261, 267 (2004) (Crandall and Sidak) ("Under a CPP regime, the [mobile network operator] collects access charges for termination services (mobile termination rates) from the caller's network, which in turn, collects the charges from the caller."); *see* Australian Competition Commission and Consumer Commission, *Pricing Methodology for the GSM Termination Service*, 25-26 (July 2001), *available at* http://www.accc.gov.au/content/index.phtml/itemId/341564 (describing the different services and revenue streams under a CPP regime).

[8] These termination fees flow from one carrier to another at the wholesale level. *See, e.g.*, NTT Docomo Comments at 3 (mobile termination rates are wholesale, per second interconnection rates paid by interconnecting carriers, both foreign and domestic, to terminate calls on a mobile operator's network); J. Scott Marcus, *Call Termination Fees: The U.S. in Global Perspective* (July 2004), *available at* ftp://ftp.zew.de/pub/zew-docs/div/IKT04/Paper_Marcus_Parallel_ Session.pdf ("[Calling Party Network Pays] refers to intercarrier compensation in the form of call termination fees that flow from one carrier to another at the wholesale level.").

[9] The foreign fixed carrier passes through an additional termination charge to U.S. carriers. This charge can come in the form of a surcharge added to the fixed line termination rate, or in the form of a separate total termination rate for mobile traffic that covers the entire cost of terminating the international call on a mobile network (*i.e.*, covering international facilities and switching, national network extension, and the domestic mobile termination charge). *See also* WorldCom (MCI) Comments at 21.

[10] The mobile surcharge is a charge added to the standard country-specific international calling rate that enables U.S. international carriers to recoup costs associated with a call that terminates on a wireless network in a country that follows the CPP regime. *See, e.g.*, Letter from Douglas W. Schoenberger, Government Affairs Director, International, AT&T to Marlene Dortch, Secretary, FCC, IB Docket Nos. 02-324 & 96-261 (dated Oct. 22, 2003) Annex A (noting that AT&T sets its consumer mobile surcharges to recover the incremental charges for this traffic levied by foreign international carriers); WorldCom (MCI) Comments at 22 (mobile surcharges paid by U.S. consumers represent a mobile termination rate charged by domestic mobile operators in other countries).

[11] Crandall and Sidak at 267. The United States and a handful of other countries follow the RPP regime for mobile termination. The Commission began an inquiry in 1997 as to whether regulatory action was necessary to promote the CPP in the United States. *Calling Party Pays Service Offering in the Commercial Mobile Services*, WT Docket No. 97-207, Notice of Inquiry, 12 FCC Rcd 17793 (1997). In 1999, the Commission sought comment on issues related to billing and customer notification under CPP. *Calling Party Pays Service Offering in the*
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5. In the *ISP Reform NPRM*, which was released on October 11, 2002, the Commission, among other things, sought comment on whether the benefits of lower international termination rates for U.S. carriers and consumers could be eroded if U.S. consumers are charged high mobile interconnection rates that certain foreign carriers impose on U.S.-outbound calls to countries with CPP regulatory regimes.[12] Accordingly, the Commission sought comment on: (1) whether foreign mobile termination rates are detrimentally affecting U.S. consumers and competition in the U.S.-international services market; (2) to the extent that there is potential harm to U.S. consumers and competition, whether it is necessary for the Commission to address high foreign mobile termination rates passed on to U.S. consumers, and, if so, how it may effectively do so; (3) whether the Commission should rely solely on market forces to protect U.S. consumers from high foreign mobile termination rates or should take steps to address any harm to U.S. consumers; (4) whether foreign carriers are abusing market power; and (5) how foreign mobile network operators or landline carriers involved in mobile termination are able to exert market power.[13]

6. In response to the Commission's questions, a number of commenters[14] stated, among other things, that high foreign mobile termination rates harm U.S. customers and competition in the U.S.-international services market,[15] and that as mobile penetration worldwide has overtaken fixed line penetration, mobile termination has become an increasingly important issue.[16] They also stated that foreign mobile termination rates passed on to U.S. customers are excessive and not based on cost.[17]

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Commercial Mobile Services, WT Docket No. 97-207, Declaratory Ruling and Notice of Proposed Rulemaking, 14 FCC Rcd 10861 (1999). In 2001, noting the diverse views on the issues raised by commenters, the Commission terminated the proceeding, explaining that it was not clear that regulatory intervention was warranted as existing rules did not preclude carriers from offering CPP services to customers. Moreover, the Commission noted that new pricing plans offering flat-rate pricing and providing free first minutes for incoming calls appear to offer customers many of the same potential benefits of CPP services. *Calling Party Pays Service Offering in the Commercial Mobile Services,* WT Docket No. 97-207, Memorandum Opinion and Order on Reconsideration and Order Terminating Proceeding, 16 FCC Rcd 8297 (2001). Mexico and Canada also employ RPP and do not have mobile termination rates. Letter from Barbara Phillips, Vice President – Public Policy, Vodafone Americas Inc., to Marlene H. Dortch, Secretary, FCC, Docket Nos. 02-324 & 96-261 at 3 (dated Mar. 3, 2004) (Vodafone Mar. 3 *Ex Parte* Letter). For a discussion of termination rates of mobile operators in the United States, *see Developing a Unified Intercarrier Compensation Regime,* CC Docket 01-92, Notice of Proposed Rulemaking,16 FCC Rcd 9601, 9637- 645, ¶¶ 78-96 (2001).

[12] *ISP Reform NPRM,* 17 FCC Rcd at 19979, ¶ 45.

[13] *Id.* at 19981-982, ¶ 51.

[14] For a more thorough discussion of comments received in the *ISP Reform* proceeding, *see infra* ¶¶ 12-17 and accompanying notes.

[15] AT&T Comments at 2, 30; Sprint Comments at 16-18; WorldCom (MCI) Comments at 18-23; CompTel Comments at 1-2; PCCW Comments at 3; AT&T Reply at 21; AT&T Wireless Reply at 6-7; MCI Reply at 20.

[16] *See, e.g.,* AT&T Comments at 31; CompTel Comments at 2; WorldCom (MCI) Comments at 22. *See also* ITU, *Mobile Overtakes Fixed: Implications for Policy and Regulation* (2003), *available at* http://www.itu.int/osg/spu/ni/mobileovertakes/ (ITU 2003 Mobile Study) (concluding that mobile has overtaken fixed in terms of number of subscribers and that access to mobile networks is becoming a new bottleneck in telecommunications).

[17] *See, e.g.,* AT&T Comments at 31-33 (alleging that mobile termination prices in Europe exceed cost by 40 to 70 percent); CompTel Comments at 1-4 (asserting that U.S. consumers are paying as much as 1,500 percent more for mobile termination than for fixed termination in some countries and there is no cost-justification for the high charges); Sprint Comments at 18; MCI Comments at 18-20; AT&T Reply at 21; MCI Reply at 20; Letter from
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Accordingly, they urged the Commission to address the issues raised by high foreign mobile termination rates. Other commenters, however, suggested that Commission action is unwarranted because regulators in various countries are actively considering the issue of high mobile termination rates.[18] They suggested that the Commission focus not on foreign mobile termination rates, but rather on foreign mobile surcharges that U.S. carriers charge their customers and whether they properly flow through reductions in foreign mobile termination rates.[19] No comments from U.S. consumers or consumer groups identified mobile termination rates as a concern.

7. In the *ISP Reform Order* released on March 30, 2004,[20] we again raised the issue of whether U.S. customers could be paying rates for foreign mobile termination service that are unreasonably high or discriminatory due to the exercise of market power by foreign carriers and consumers' lack of information or awareness of the surcharge.[21] As a matter of principle, we stated in the *ISP Reform Order* that where foreign mobile termination rates are excessive, they should move towards cost.[22] We also stated that "consistent with our broad authority to protect U.S. consumers from harms resulting from anti-competitive behavior, the Commission will respond to petitions and notifications when addressing anti-competitive harms, including rates not based on costs, with regard to mobile termination rates on individual routes."[23] As we did not receive sufficient information in response to our *ISP Reform NPRM* to assess properly the effects of foreign mobile termination rates on U.S. customers and competition in the U.S.-international services market, we committed to initiating this *NOI*.[24]

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Nancy J. Victory, Assistant Secretary for Communications and Information, US Department of Commerce, NTIA to Michael Powell, Chairman, FCC, IB Docket Nos. 02-324 & 96-261 (dated Aug. 5, 2003) (NTIA Aug. 5 *Ex Parte* Letter at 3).

[18] *See* Letter from Erkki Liikanen, Member, European Commission, to Michael Powell, Chairman, FCC, IB Docket Nos. 02-324 & 96-261 at 1-2 (dated Mar. 4, 2004) (EC Mar. 4, 2004 *Ex Parte* Letter); Letter from Stephen Timms, MP, Department of Trade and Industry, United Kingdom, to David Gross, Ambassador, United States Department of State, IB Docket Nos. 02-324 & 96-261 at 1-2 (dated Mar. 3, 2004) (UK Department of Trade and Industry Mar. 3, 2004 *Ex Parte* Letter); Letter from Anette C. Bordes, Director, Legal and Regulatory, KPN Mobile N.V. to Marlene Dortch, Secretary, FCC, IB Docket Nos. 02-324 & 96-261 at 1-2 (dated Mar. 4, 2004) (KPN Mar. 4, 2004 *Ex Parte* Letter); Letter from Cheryl A. Tritt, Counsel, T-Mobile USA to Marlene Dortch, Secretary, FCC, IB Docket Nos. 02-324 & 96-261 at 2 (dated Feb. 2, 2004) (T-Mobile Feb. 2, 2004 *Ex Parte* Letter).

[19] *See, e.g.*, Verizon Comments at 10; Vodafone Comments at 15; Vodafone Reply at 11; C&W Comments at 25; AHCIET Comments at 12; NTT DoCoMo Comments at 3-6; Orange SA Comments at 1; KDDI Reply at 3, 5. *See also* Letter from Marco De Benedetti, Chief Executive Officer, Telecom Italia Group to Marlene Dortch, Secretary, FCC, IB Docket Nos. 02-324 & 96-261 at 3 (dated Mar. 2, 2004) (Telecom Italia Mar. 2, 2004 *Ex Parte* Letter); Letter from Leslie J. Martinkovics, Director, International Regulatory Affairs, Verizon to Marlene Dortch, Secretary, FCC, IB Docket Nos. 02-324 & 96-261, Annex A (dated Mar. 2, 2004) (Verizon Mar. 2, 2004 *Ex Parte* Letter).

[20] *ISP Reform Order*, 19 FCC Rcd at 5749-751, ¶¶ 90-92.

[21] *Id.* at 5749-750 ¶¶ 88 and 90. *See, e.g.*, AT&T Comments at 31; CompTel Comments at 1-2.

[22] *ISP Reform Order*, 19 FCC Rcd at 5750-751, ¶ 91.

[23] *Id.* ("Relying on a case-by-case approach . . . permits us to take into account the differences in the state of competition and particular facts on each route.").

[24] *Id.* at 5750-751, ¶¶ 90-92.

8. Subsequent to the release of the *ISP Reform Order*, Commission staff met with members of industry to solicit data and information on foreign mobile termination rates.[25]

III. DISCUSSION

A. Request for Information about Mobile Termination Payment Arrangements

9. A number of economists and regulators have compared termination charges under CPP and RPP regimes, and some studies indicate that mobile termination rates are higher under a CPP regime compared to an RPP regime.[26] These studies attribute higher mobile termination rates under the CPP regime to the lack of competitive incentives for the mobile network operators to reduce termination rates and to the lack of customer awareness of whether and to what extent they are paying mobile surcharges. We seek comment on these studies and on the economic incentives for mobile network operators in CPP or RPP countries to reduce or increase their mobile termination rates. As an initial matter, have we correctly characterized above the payment arrangements between carriers in the different regimes? What are the incentives for the called party to subscribe to a network that provides the lowest termination rates for incoming calls under a CPP regime? Does the called party's awareness of mobile termination charges play a role in the selection of the network that terminates the call? Does a mobile subscriber take into account mobile termination rates when selecting a mobile carrier? When placing a call to mobile phones, are consumers aware that they are calling a mobile phone, and are they aware of the charges for such calls? Is there any evidence that mobile termination rates are affecting the number of minutes of calls being made from the U.S. to mobile phones in other countries? Do mobile network operators in either CPP or RPP countries have an incentive to charge termination rates that significantly exceed the costs of terminating the call?[27] We also seek comment and information regarding the economic effects of foreign CPP payment arrangements on U.S. customers.

10. Certain economists assert that revenues from higher termination rates are generally used to subsidize consumer handsets and offset consumer acquisition costs and billing costs.[28] We seek analyses of the idea that, while mobile network operators under the CPP regime have an incentive to keep the connection, activation, and monthly subscription charges low to attract and retain customers, they may have less incentive to keep the price of incoming mobile calls low because callers have little choice but to terminate their calls on the mobile network chosen by the mobile subscriber.[29] To the extent parties disagree with this position, is this a policy choice for individual countries that should not be challenged

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[25] Commission staff met with AT&T, CTIA, MCI, Nextel Peru, Sprint, Verizon, and Vodafone, which all provided certain data and information regarding foreign mobile termination rates for this *NOI*.

[26] *See also* Crandall and Sidak; Joshua Gans, Stephen King, and Julian Wright, *Wireless Communications, Handbook of Telecommunications Economics* (Martin Cave et. al. eds., North-Holland Volume 2) (2004); Chris Doyle and Jennifer C. Smith, Regulation Initiative Working Paper No. 21: *Market Structure in Mobile Telecoms: Qualified Indirect Access and the Receiver Pays Principle* (May 1999), *available at* http://ssrn.com/abstract=321420.

[27] *See also Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions with respect to Commercial Mobile Services*, WT Docket No. 02-379, 18 FCC Rcd 14783, 14873, ¶ 209 (2003) (*Eighth CMRS Report*).

[28] *See supra* n.26.

[29] *See also* Oftel, *Review of the Charge Control on Calls to Mobiles* (Sept. 2001) *available at* http://www.oftel.gov.uk/publications/mobile/ctm0901.htm.

by the Commission?[30]

11. In many CPP countries, mobile phone customers have to pay higher charges for calls to subscribers of different mobile networks (off-net calls) than for calls to subscribers on their own network (on-net calls).[31] According to at least one report, there may be little incentive to keep the termination rates low because a lower wholesale termination rate may lead to a lower retail rate, which would help mobile network operator's rivals by reducing their costs.[32] Do the differences between on-net and off-net pricing allow large mobile operators to protect themselves from competition from smaller rivals?[33] We request additional information on the issue of on-net and off-net differentials and on whether and to what extent foreign national regulatory authorities are addressing these differentials. We also seek comment on whether differing on-net and off-net mobile termination rates have a negative impact on U.S. customers.

B. Request for Data and Information on Foreign Mobile Termination Rates

12. ***Concerns Raised in the ISP Reform Proceeding.*** We generally seek comment, data, and analyses on the following concerns raised in the *ISP Reform* proceeding: (1) whether mobile termination rates are unreasonably high; (2) the possible effect of high foreign mobile termination rates on U.S. customers, (3) the Commission's role in addressing issues raised by foreign mobile termination rates in light of international law[34] and ongoing proceedings in other fora such as national regulatory and multilateral bodies;[35] (4) the value of consumer alerts and consumer education as a means of addressing

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[30] *See, e.g.*, Verizon Mar. 2, 2004 *Ex Parte* Letter Annex C, BellSouth Reply Comments at 8; Orbitel Comments at 4; Telefónica Comments at 7-10. Letter from Marco De Benedetti, CEO, Telecom Italia Mar. 3, 2004 *Ex Parte* Letter Annex A at 1-2; Vodafone Comments at 11-16.

[31] For example, in Peru, Telefónica's mobile termination rate for on-net calls is approximately four times lower than the mobile termination rate for off-net calls terminated on its network. *See* Diario La Republica, at 15 (Economy Section) (Feb. 4, 2004) (Telefónica Móviles S.A.C.'s mobile services tariffs outlined as 1200 minutes at US$40.00, which amounts to US$0.03 per minute, effective as of February 4, 2004). On-net/off-net pricing is also available in the United States. *See Eighth CMRS Report,* 18 FCC Rcd at 14828-829, ¶ 94.

[32] Independent Regulators Group, *Principles of Implementation and Best Practice on the Application of Remedies in the Mobile Voice Call Termination Market* at 12 (Apr. 1, 2004), *available at* http://irgis.icp.pt/admin/attachs/384.pdf (Independent Regulators Group Report). The Independent Regulators Group shares experiences and points of views among its members on issues of common interest such as interconnection, prices, universal service, and other issues relating to the regulation and development of the European telecommunications market. The Independent Regulators Group, *What's IRG?, available at* http://irgis.anacom.pt/site/en/irg.asp.

[33] *See Consultation Document on a Draft joint ERG/EC approach on appropriate remedies in the new regulatory framework* (Nov. 21, 2003), *available at* http://erg.eu.int/doc/publications/erg0330_draft_joint_approach_on_remedies.pdf.

[34] *See, e.g.*, Vodafone Reply at 9; AT&T Wireless Reply at 3-5 (arguing that introduction of benchmarks for foreign mobile termination rates by the Commission would conflict with the rule of international comity).

[35] *See, e.g.*, Verizon Comments at 9-10; Verizon Reply at 5, 7-8; Sprint Comments at 19; Vodafone Comments at 9-10; C&W Comments at 20-21, 26; EC Comments at 3; GSM Europe Comments at 8; Government of Japan Reply at 1-2; NTT DoCoMo Reply at 9; ANIEL Comments at 4-6; BellSouth Reply at 2; KDDI Reply at 4-5; KPN Reply at 3-5; PCCW Reply at 3; T-Mobile Reply at 2, 5-6; Vodafone Reply, Annex B. *See also* AHCIET Comments at 12; ETNO Comments at 1-2; Verizon Comments at 9-10; Orbitel Reply at 4; EC Reply at 3-4; AT&T Wireless Reply at 3, 9; KPN Reply at 10; CTIA Nov. 25, 2003 *Ex Parte* Letter at 1-2 (arguing that the

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foreign mobile termination rates;[36] and (5) the level of competition in foreign mobile telecommunications markets.[37]

13. We specifically request information and data on whether high foreign mobile termination rates improperly shift a cost burden to the U.S. calling party.[38] Additionally, what are the growth trends of mobile subscribership and traffic worldwide? Our data indicates that mobile telephony is increasing significantly[39] and appears to have a growing impact on U.S.-international calling rates.[40] We seek comment on whether the benefits of lower international termination rates and calling prices U.S. customers pay for fixed calls are eroding in light of the increase in mobile telephony worldwide and whether high foreign mobile termination rates are a factor?[41] Do these ongoing developments involving mobile termination rates undermine the benefits achieved by our benchmark policies?

14. Several commenters contend that the Commission should not take action in this proceeding because, among other things, foreign regulators are evaluating mobile termination rates.[42] Some national regulatory authorities, however, have decided not to regulate mobile termination rates, with varied results, and AT&T suggests that, as more countries impose mobile charges, a majority of those countries are not taking any regulatory action concerning foreign mobile termination rates.[43] We set forth, in Appendix B, a description of the actions taken by national regulatory authorities in various countries regarding mobile termination rates. How would the actions of these regulators affect U.S. customers calling mobile telephones operating in their jurisdictions? Does the Commission have a role in addressing charges imposed on U.S. customers for foreign mobile termination? We request additional information from industry and national regulatory authorities on regulatory developments concerning

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Commission should defer to relevant national and multilateral organizations); Jeffrey Rohlfs Comments at 3-4 (noting that callers may unknowingly incur fixed-to-mobile termination charges under CPP regimes).

[36] *See, e.g.*, Orange SA Comments at 5; C&W Comments at 19; KPN Comments at 10; T-Mobile Reply Comments at 5; Verizon Comments at 10; Verizon Reply Comments at 8 (suggesting that the Commission promote the transparency of pricing for international calls that terminate on a foreign mobile network and raising U.S. customers' awareness of foreign mobile termination rates and surcharges).

[37] *See, e.g.*, Verizon Comments at 10; Vodafone Comments at 15; C&W Comments at 25; AHCIET Comments at 11-12; Orbitel Reply at 4; KPN Reply at 10; T-Mobile Reply at 2-5 (acknowledging the Commission's consumer alert regarding foreign mobile termination rates and encouraging the Commission to increase its efforts in educating customers about foreign mobile surcharges).

[38] *See, e.g.*, CompTel Comments at 2, 4; WorldCom (MCI) Comments at 17, 22.

[39] *See* ITU 2003 Mobile Study.

[40] *See, e.g.*, CompTel Comments at 2-4; WorldCom (MCI) Comments at 20-23.

[41] *ISP Reform NPRM*, 17 FCC Rcd at 19980, ¶ 48; *ISP Reform Order*, 19 FCC Rcd at 5748, ¶ 87. *See, e.g.*, AT&T Comments at 31; CompTel Comments at 2; WorldCom (MCI) Comments at 22.

[42] *See, e.g.*, Letter from Diane Cornell, Vice President, Regulatory Affairs, Cellular Telecommunications & Internet Association to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 02-324 & 96-261 (dated Mar. 1, 2004); Letter from Marco De Benedetti, Chief Executive Officer, Telecom Italia Group to Marlene Dortch, Secretary, FCC, IB Docket Nos. 02-324 & 96-261 (dated Mar. 3, 2004) (Telecom Italia Mar. 3, 2004 *Ex Parte* Letter) Annex A at 2-3; Telecom Italia Reply, at 9; Vodafone Comment at 9-11.

[43] *See* AT&T Feb. 18 *Ex Parte* Letter at 3, 8-10

mobile termination rates in foreign countries.

15. We request comment and information from U.S. international carriers and consumer organizations on the number and type of consumer complaints they have received concerning foreign mobile termination charges. We also seek comment and analyses on the level of U.S. customers' awareness of the foreign mobile surcharge imposed by U.S. carriers and the foreign mobile termination rates charged by foreign mobile network operators. What consumer education and outreach efforts, if any, are being conducted by U.S. carriers to educate U.S. customers regarding foreign mobile termination rates and surcharges?[44] To the extent that such consumer education efforts are taking place, what effect, if any, do these efforts have on the calling behavior of U.S. customers and on foreign mobile termination rates and surcharges?[45] Do U.S. customers have a meaningful opportunity to select lower mobile surcharges among U.S. international carriers? Do appropriate substitutes exist for U.S.-outbound calls to foreign mobile phones?[46] How and to what extent are consumer education efforts and billing transparency[47] affecting the demand for international calls to foreign mobile telephone numbers? What actions, if any, have foreign mobile network operators and national regulatory authorities in CPP countries taken to educate domestic fixed callers on mobile termination rates, and what are the results of these efforts?

16. As we stated in the *ISP Reform Order*, we are concerned about whether U.S. customers may be paying rates that are discriminatory.[48] We seek information and comment on whether discriminatory foreign mobile termination charges have been imposed on U.S. international carriers. What is the Commission's role in addressing instances where foreign fixed carriers impose inflated or discriminatory foreign mobile termination charges on U.S. international carriers?[49] We also seek comment on whether,

[44] The Commission and U.S. carriers have taken steps to educate U.S. consumers regarding foreign mobile termination rates and surcharges. *See, e.g.*, "What is an international mobile surcharge?" *available at* http://www.mci.com; "Consumer Information: AT&T Mobile Termination Charge Information for International Callers," *available at* http://www.att.com; "International Mobile Termination," *available at* http://www.sprint.com/mobilesurcharge. Federal Communications Commission Consumer Alert, *Surcharges for International Calls to Mobile Phones* (last updated on October 6, 2003), *available at* http://ftp.fcc.gov/cgb/consumerfacts/surcharge.html. *See also* 47 C.F.R. § 42.10(b) (requiring public availability of information concerning interexchange services).

[45] *See* Crandall and Sidak 261 (positing that consumer education would solve the potential market failure in CPP countries without the need to impose price regulation on otherwise competitive markets and suggesting that price regulation is neither socially optimal nor realistic).

[46] *See also* Crandall and Sidak at 286-291 (positing that the existence of substitutes, *e.g.*, mobile-to-mobile calls, mobile-to-fixed calls, data messages, fixed-to-fixed calls, routing fixed-to-mobile calls through mobile networks, and other services, constrains the market power on a mobile network operator in pricing).

[47] For example, according to USTR's recent 1377 Report, subscribers in Finland enjoy relatively low fixed-to-mobile termination rates, based, in part, on the national regulatory authority's requirement of greater billing transparency. U.S. Trade Representative, Results of 2004 Section 1377 Review of Telecommunications Trade Agreements (April 7, 2004).

[48] *ISP Reform Order*, 19 FCC Rcd at 5750-751, ¶ 90.

[49] The Commission has recognized that USTR, as the Executive Branch agency that negotiates and enforces U.S. trade laws and rights under international agreements, is responsible for responding to complaints and bringing disputes regarding alleged violations of WTO commitments by trading partners that do not affect competition in (continued....)

and to what degree, affiliations between foreign fixed carriers and mobile network operators affect foreign mobile termination rates. For example, if a foreign carrier owns both a mobile and a fixed carrier, can apparently equal mobile termination rates be discriminatory because charges paid within a corporate family are different from charges paid to an independent fixed carrier?

17. We also seek comment on other concerns raised in the *ISP Reform* proceeding such as the relevant payment arrangements and flow-through of foreign mobile termination rates[50] and the specific application of the 1997 benchmarks policy to foreign mobile termination rates.[51]

18. ***Request for Foreign Mobile Termination Rate Data***. As we previously stated, because U.S. carriers must negotiate for mobile termination through a foreign fixed carrier, there are generally three components to foreign mobile termination charges: (1) the mobile termination rate that the foreign mobile network operator charges the foreign fixed carrier; (2) the mobile settlements rate that foreign fixed carriers charge U.S. international carriers;[52] and (3) the mobile termination surcharge that the U.S. carriers charge U.S. customers.[53] We set forth the data that we have collected in Appendices C-E and request additional information and data regarding foreign mobile termination rates. In particular, we seek specific, disaggregated, and comprehensive information on whether rates related to mobile termination are decreasing or increasing and whether carriers in more countries are imposing such rate charges.[54]

19. Mobile Termination Rates. Data on foreign mobile termination rates are generally not publicly available. In this case, the publicly available data that we have on mobile termination rates are limited to the information contained in a 2004 study by the Independent Regulators Group (IRG),[55] which

(Continued from previous page)
domestic U.S. markets. *Rules and Policies on Foreign Participation in the U.S. Telecommunications Market, Market Entry and Regulation of Foreign Affiliated Entities*, IB Docket Nos. 97-142 & 95-22, Report and Order and Order on Reconsideration, 12 FCC Rcd 23891, 23908, ¶ 39 (1997).

[50] *See supra* n.19.

[51] *See, e.g.*, AT&T Comments at 30; CompTel Comments at 1; PCCW Comments at 2; MCI Comments at 24 (all supporting the application of existing benchmarks to foreign mobile termination rates); *but see* Vodafone Comments at 14; Vodafone Reply at 3-4; Verizon Comments at 9-10; Verizon Reply at 6-7; NTT DoCoMo Comments at 11-12; GSM Europe Comments at 2, 6-7; Orange SA Comments at 1, 5; Telefónica Comments 7-8; Telecom Italia Comments at 7-8; BellSouth Reply at 3-4; KPN Reply at 8; Letter from Diane Cornell, Vice President, Regulatory Affairs, Cellular Telecommunications & Internet Association to Marlene Dortch, Secretary, FCC, IB Docket Nos. 02-324 & 96-261 at 1 (dated Nov. 25, 2003) (CTIA Nov. 25, 2003 *Ex Parte* Letter) Letter from Barbara Phillips, Vice President Public Policy, Vodafone Americas Inc. to Marlene Dortch, Secretary, FCC, IB Docket Nos. 02-324 & 96-261 at 1-3 (dated Mar. 3, 2004) (Vodafone Mar. 3, 2004 *Ex Parte* Letter) (all opposing the application of the benchmarks to foreign mobile termination rates).

[52] *See supra* n.9.

[53] *See, e.g.*, Vodafone Comments at 6-11.

[54] U.S. international carriers have indicated to us that rates paid to foreign correspondents for the termination of mobile traffic may be confidential in nature. Commenters that wish confidential treatment of their submissions should request that their submission, or specific part thereof, be withheld from public inspection.

[55] Independent Regulators Group, *IRG Snapshot of Mobile Termination Rates* (Jan. 31, 2004), *available at* http://irgis.icp.pt/site/en/conteudos.asp?id_conteudo=21309&id_l=274&ln=en&id_ area=277&ht=Documents. In the Independent Regulators Group Report, the IRG stated that "[i]n order to support development of [mobile termination] charges at a competitive level, and to assist [national regulatory authorities] in deciding on [mobile
(continued….)

is set forth in Appendix C. The IRG presents the mobile termination rates of 28 countries as of January 31, 2004. We request additional data on foreign mobile termination rates for all relevant routes from national regulatory authorities, foreign fixed operators that pay such rates, and foreign mobile network operators.

20. Mobile Settlements. Information on mobile settlements is important to our analysis of whether, and to what extent, the foreign fixed carriers are "marking up" the charges that they pay mobile network operators to terminate traffic (*i.e.* whether the rates foreign fixed carriers charge U.S. international carriers are equal to or exceed the rates they pay mobile network operators). We set forth in Appendix D what we believe to be international mobile settlements data from a 2002 study by the International Telecommunications Users Group (INTUG).[56] We seek comment on this data, and we request additional information from U.S. international carriers and their international fixed correspondents regarding mobile settlements data for all relevant routes that charge mobile termination rates. We also seek comment and information on whether mark-ups, to the extent that they exist, are excessive.

21. Mobile Surcharges. Commission staff has compiled several charts detailing the mobile surcharges that major U.S. international telecommunications carriers charge their residential customers.[57] The charts are based on data collected by Commission staff from the websites of various carriers. Based on our analysis and as shown in the following chart titled "Summary of Residential Mobile Surcharges: Amount and Country Distribution (2004)," we determined that U.S. carriers have mobile surcharges for 161 out of 228 countries.[58] The chart also shows the distribution of surcharge amounts by country. Appendix E provides a complete listing of residential mobile surcharges by country.

Summary of Residential Mobile Surcharges
Amount and Country Distribution

Amount of Surcharges	Number of Countries
(1) Surcharge >=$0.0 but < $0.02	46
(2) Surcharge >=$0.02 but < $0.05	28
(3) Surcharge >=$0.05 but < $0.10	37
(4) Surcharge >=$0.10 but < $0.15	11
(5) Surcharge >=$0.15 but < $0.20	26
(6) Surcharge >=$0.20 but < $0.25	11
(7) Surcharge >=$0.25	2
Total countries with surcharges	161
Total countries without surcharges	67
Total countries count (w/o U.S. Territories)	228

(Continued from previous page)
termination] charges, IRG will publish a benchmark on [mobile termination] charges." Independent Regulators Group Report at 27.

[56] INTUG, *Termination of International Calls to Mobile Networks, Submission by INTUG to ITU-T SG3,* at 3-7 (June 2002) (citing Arbinet April 2002 data comparing mobile international termination rates with fixed network termination rates) *available at* http://www.intug.net/submissions/ITU-T-SG3_intl_termination_revised.html.

[57] These carriers include AT&T, MCI, Sprint, and Verizon.

[58] This chart is a summary of the information contained in Tables 2 and 3 of Appendix E. *See also* AT&T Feb. 18, 2004 *Ex Parte* Letter, at 3.

22. We also set forth in Tables 4 and 5 of Appendix E estimates of mobile surcharges to U.S. residential customers. Based on those charts, we have determined, among other things, that the mobile surcharges to the United Kingdom, Germany, Italy, Philippines, France, Japan, Netherlands, Australia, Brazil, and Spain collectively account for approximately 61 percent of the total amount of mobile surcharges paid by U.S. customers.[59] We seek comment and analyses on the information contained in these appendices. We seek additional data and information on mobile surcharges imposed by U.S. carriers on U.S. customers.

23. We also seek comment, information, and data on the allegation raised in the *ISP Reform* proceeding that there is an opportunity for U.S. international carriers to unreasonably "mark up" these interconnection charges as they are passed through to U.S. customers in the form of surcharges.[60] We note that, by examining aggregate data, *i.e.*, the total charges paid by major U.S. international carriers to their foreign correspondents for termination of mobile traffic and the total mobile surcharges charged by these carriers to U.S. customers, it may be possible to ascertain whether, and to what extent, U.S. international carriers have unreasonably "marked up" mobile termination rates.[61]

C. Request for Information on How to Analyze Foreign Mobile Termination Data

24. In the *ISP Reform Order*, the Commission expressed concern about whether U.S. customers might be paying rates for foreign mobile termination services that are unreasonably high, and we committed to initiate this *NOI* to ensure that we truly understand the magnitude of this problem.[62] As described in detail below, several approaches to evaluating the reasonableness of mobile termination rates have been advocated by private parties or adopted by foreign regulatory authorities. We seek comment on what framework should be used: (1) to evaluate the data on mobile termination rates and mobile settlements and (2) to determine whether these rates are unreasonably high. We ask interested parties to comment on the various approaches and to provide alternative frameworks for evaluating data on foreign mobile termination.

25. In the 1997 *Benchmarks Order*, the Commission considered the proper cost standard by which to evaluate settlement rates. At that time, mobile markets in foreign countries were only just developing and had not made an impact on costs of international termination for U.S. customers. Consequently, the Commission focused its analysis on the wireline termination market. The Commission concluded that the appropriate standard was "forward-looking long-run incremental cost ["a LRIC cost standard"] plus a reasonable contribution to joint and common costs," because such a standard replicated

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[59] *See* Appendix E, Table 5.

[60] *See, e.g.*, Telecom Italia Mar. 3, 2004 *Ex Parte* Letter; Verizon Mar. 2, 2004 *Ex Parte* Letter Annex A.

[61] A competitive U.S.-international market does not guarantee that the amounts paid by U.S. customers are equal to the amounts paid by U.S. international carriers for the termination of traffic on foreign mobile networks. For instance, on a given route, a U.S. international carrier may terminate traffic with several correspondents, each of which may charge a different mobile termination rate. To minimize billing complexity on the U.S. end, the U.S. carrier may establish a single mobile surcharge for the route. To avoid arbitrage, it may be necessary for the U.S. carrier to set the surcharge equal to the highest mobile termination rate on the route.

[62] *ISP Reform Order*, 19 FCC Rcd at 5749-750, ¶ 90. *See, e.g.*, AT&T Comments at 31; CompTel Comments at 1-2.

the welfare-enhancing dynamics of a competitive market.[63] The Commission conceded, however, that the data necessary to calculate foreign carriers' incremental costs were not available. Consequently, the Commission decided to adopt a "tariffs component price" (TCP) methodology that relied on foreign carriers' publicly available tariffs and data published by the ITU Telecommunication Standardization Sector (ITU-T).[64] The Commission concluded that this methodology would result in benchmarks that would exceed foreign carriers' costs of terminating international traffic, but would, nonetheless, be substantially below most prevailing settlement rates and represent progress toward achieving cost-based rates.[65]

26. In an *ex parte* filing in the *ISP Reform* proceeding, AT&T submitted a "revised tariffed components price (R-TCP) study" as a basis for capping termination rates on both foreign mobile and fixed networks.[66] The R-TCP study purports to show that the cost of terminating traffic on mobile networks is lower than approximately US$ 0.085 per minute. The R-TCP study is modeled, in part, after the methodology developed by the Commission in its *Benchmarks Order*[67] and is the only cost study of foreign mobile termination rates that has been filed before the Commission.[68]

27. We seek comment on whether AT&T's revised TCP study is a reasonable framework for

[63] *International Settlement Rates*, IB Docket No. 96-261, Report and Order, FCC 97-280, 12 FCC Rcd 19806, 19825-827, ¶¶ 40-42 (1997) (*Benchmarks Order*) (LRIC more closely corresponds to the charges that prevail in a competitive market than historical, accounting-based measures of cost).

[64] *Benchmarks Order*, 12 FCC Rcd at 19827, ¶ 43. The TCP study was based, in part, on foreign tariffs for services that were similar to the three component services needed for termination of U.S.-international traffic. The component services are international transport (the transport of traffic between the U.S. carrier's hand-off point and the international switch in the destination country), international switching (the first point of switching in the destination country), and national extension (the cost of transporting traffic from the international switch and terminating it with the called party in the destination country). International switching costs were estimated from ITU studies, but international transport and national extension costs were estimated from tariffs for similar services in the destination country. International transport cost estimates were based on international private line tariffs and national extension cost estimates were based on local and domestic long-distance tariffs.

[65] *Benchmarks Order*, 12 FCC Rcd at 19827, ¶ 44.

[66] Letter from Douglas W. Schoenberger, Government Affairs Director, International, AT&T to Marlene Dortch, Secretary, FCC, IB Docket Nos. 02-324 & 96-261 (dated Feb. 5, 2004) Annex A, Revised Tariffs Component Pricing (R-TCP) Benchmark Study (AT&T R-TCP Study). *See also* AT&T Comments at 34; AT&T Reply at 21-22.

[67] In the *Benchmarks Order*, the Commission found that settlement rates (*i.e.*, rates charged by foreign operators for the termination of U.S. international traffic abroad) were above cost in many countries. As a remedy, the Commission used a TCP study of 65 representative countries to cap settlement rates at "benchmark" levels of $0.15, $0.19, and $0.23 for high, middle, and low-income countries respectively. The Commission found that benchmarks calculated on the basis of the TCP study would result in lower, more cost-based, settlement rates for countries with settlement rates that were above benchmarks. The Commission also found that the proper cost standard for evaluating whether settlement rates were cost-based was a LRIC standard plus a "reasonable" contribution to overheads. The Commission found that the TCP cost estimates were lenient upper-bounds on LRIC costs. *Benchmarks Order*, 12 FCC Rcd at 19815-816, ¶ 19.

[68] The R-TCP study develops separate TCPs for fixed and mobile termination. AT&T R-TCP Study. However, for purposes of this NOI, we restrict our attention to the TCPs for mobile termination. The study is available through the Commission's Electronic Comment Filing System at http://www.fcc.gov/cgb/ecfs/.

evaluating whether foreign mobile termination rates are excessive. In the *Benchmarks Order*, the Commission expressed confidence that the TCP method used to establish benchmarks was fair to foreign operators because the TCP rates were significantly above LRIC and included a reasonable contribution to overheads.[69] We seek comment on whether this is true of the R-TCP study. As described in Appendix F, certain aspects of the estimation methods used in the R-TCP study differ from those in the original study.[70] We seek comment on whether the rates estimated by the R-TCP study accurately capture the incremental costs associated with terminating traffic on foreign mobile networks, include reasonable levels of overhead costs, and are fair to foreign operators.

28. We also seek comment on whether the rates for mobile termination calculated in the R-TCP study are directly comparable to mobile termination rates charged by foreign mobile network operators. The rates calculated in the R-TCP study reflect the costs of international transport, international switching, and national extension in the foreign country, as well as the cost of termination on the mobile network of the called party.[71] As we understand it, the mobile termination rates charged by foreign mobile network operators are intended to recover the cost of termination on the mobile network of the called party only, and they are not meant to defray the costs of international transport, international switching, and national extension, which are recovered as part of settlement rates charged to U.S. international carriers by their foreign fixed-line correspondents.[72]

29. The national regulatory authorities of the United Kingdom,[73] South Korea, and Sweden,[74] among others, have conducted cost studies of mobile termination rates charged by mobile network operators in their own countries. We seek comment on whether the standards used in these cost studies could serve as a useful framework for our evaluation of whether foreign mobile termination rates are unreasonably high and whether the cost estimates developed in the foreign studies could serve as actual reference points in our efforts to identify unreasonably high rates. We also seek comment on whether these studies may or may not be the appropriate model when applied to markets where mobile services are not subject to rate regulation.

30. In June 2004, the British regulatory authority Ofcom released a final decision finding that wholesale mobile voice call termination rates charged by U.K. mobile network operators are excessive.[75]

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[69] *Benchmarks Order,* 12 FCC Rcd at 19827, ¶ 44, 1839-850, ¶¶ 66-89.

[70] For instance, AT&T's revisions include use of private line tariffs for national extension rather than long-distance calling tariffs, half of local tariffs for local termination rather than full local tariffs, and subtraction of "avoided" retail costs. AT&T R-TCP Study, 1-8.

[71] AT&T R-TCP Study, 1-8.

[72] *See supra* n.9.

[73] The U.K. proceeding was a notice and comment proceeding in which parties to the proceeding expressed a wide range of views relevant to the identification of the proper framework for evaluating the reasonableness of mobile termination rates. The U.K. regulatory authorities published a detailed explanation of its decisions, including an analysis of the comments. The recent conclusion of the proceeding in June 2004 is especially timely, and, because the proceeding was in English, its record is easily accessible to us.

[74] The national regulatory authorities of Sweden and South Korea have also adopted or will adopt a LRIC cost model to calculate mobile interconnection costs. *See* Appendix B.

[75] Ofcom established a rate cap of 5.63 pence per minute (ppm) for Vodafone and O2 and 6.31 pence per minute for T-Mobile and Orange, for the period 2005-2006. Ofcom, *Statement on Wholesale Mobile Voice Call*
(continued….)

As an initial step in its inquiry, Ofcom (and its predecessor agency, Oftel) sought to determine whether the U.K. mobile network operators possessed significant market power in the relevant market.[76] Ofcom concluded that the completion of calls by a mobile network operator to its customer base constitutes a relevant market and that the mobile network operator, as the sole provider of service to its customer base, has market power within that market.[77] Ofcom also concluded that forward-looking long-run incremental cost is the proper standard for the estimation of cost-based rates, because the forward-looking LRIC of voice termination more closely corresponds to the charges that prevail in a competitive market than historical, accounting-based measures of cost.[78] Ofcom found that mobile networks have low common costs[79] and that a small mark-up over incremental costs would suffice as a contribution by mobile termination rates to the recovery of common costs.[80] Ofcom calculated the mark-up based upon a finding that all mobile services should make a uniform proportional contribution to defray common costs[81] and rejected the idea of "Ramsey pricing,"[82] a form of non-uniform mark-ups.[83] Ofcom also included a further mark-up termed a "network externality factor." According to Ofcom, the network externality is the benefit obtained by existing telephone users (including fixed-line callers) from new mobile subscribers. That benefit derives from the ability of existing users to call or be called by the new subscriber.[84] Thus, according to Ofcom, mobile network operators can benefit telephone users by subsidizing subscription and recovering part of the cost through a mark-up on mobile termination rates.[85]

31. In contrast to this approach, Verizon submitted a report by Charles River Associates, a

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Termination, Ofcom Consultation, June 1, 2004 at ¶ 6.87, *available at* http://www.ofcom.org.uk/consultations/past/wmvct.pdf (Ofcom Consultation Statement). At an exchange rate of US$1.87 for the British pound, the target rate of 5.63 ppm is equal to US$0.1053 per minute and the target rate of 6.31 ppm is equal to US$0.1180 per minute.

[76] Ofcom Consultation Statement at ¶¶ 3.1–3.58.

[77] Under European Union law, regulation of a carrier's rates is permissible only upon finding that the carrier possesses significant market power. *See* Appendix B. Ofcom found that callers had no adequate substitutes for services offered by a mobile network operator to complete calls to a party in that mobile network operator's customer base and that there were no adequate alternative suppliers. *See* Ofcom Consultation Statement.

[78] Ofcom Consultation Statement at ¶ 6.5.

[79] Ofcom estimates that common costs comprise only 10-15 percent of the total network and non-network costs of a mobile network operator. Oftel, *Wholesale Mobile Voice Call Termination: Proposals for the Identification and Analysis of Markets, Determination of Market Power and Setting of SMP Conditions,* Explanatory Statement and Notification, December 19, 2003 at ¶ K.41 (Oftel Explanatory Statement and Notification).

[80] Ofcom also considered it appropriate for mobile termination services to contribute towards the recovery of common costs through a mark-up of mobile termination rates above LRIC. Ofcom Consultation Statement at ¶ 6.8.

[81] Ofcom adopted the term "equi-proportionate mark-up" or EPMU. Ofcom Consultation Statement at ¶ 6.4.

[82] Ramsey pricing is a linear pricing scheme designed for the multiproduct natural monopolist. *See* Frank P. Ramsey, A Contribution to the Theory of Taxation, 37 Econ. J. 47 (1927).

[83] Ramsey prices "raise complex conceptual and practical issues which do not allow for sufficiently reliable optimal prices to be estimated." Ofcom Consultation Statement at ¶ 6.8.

[84] Oftel Explanatory Statement and Notification at ¶ G.6.

[85] *Id.*

private consultancy group, on fixed-to-mobile termination rates as an *ex parte* filing in the *ISP Reform* proceeding.[86] According to the Charles River Report, the proper standard by which to evaluate the reasonableness of mobile termination rates is the level of competition in the mobile market, not whether the rates exceed a certain measure of cost.[87] The Charles River Report's definition of relevant markets stands, however, in direct opposition to Ofcom's findings. According to the Charles River Report, "the relevant market is the retail market for a basket of mobile services (handsets, access, outgoing calls, and incoming calls) rather than a more narrowly defined national market for mobile call termination, or the still narrower market for call termination on the network of each mobile operator."[88] According to the Charles River Report, in most mobile markets, mobile network operators compete by offering a bundle of retail services to potential subscribers, and competition involves all elements of the bundle.[89] Various mobile network operators who participated in the U.K. proceedings set forth similar views.[90]

32. The Charles River Report also discusses the framework for determining whether mobile termination rates are economically "efficient."[91] The Charles River Report observes that a high charge for fixed-to-mobile calls is not necessarily an inefficient or "monopoly" price,[92] because high mobile termination rates may serve certain desirable purposes, such as the minimization of unwanted calls by the called party, investment in telecommunications infrastructure, and promotion of universal service.[93] According to the report, a LRIC-based price for all calls is not necessarily efficient.[94] An efficient price structure for mobile services is likely to be achieved, the report asserts, when there is vigorous competition in the retail market for mobile services.[95]

33. Finally, the Charles River Report evaluates several options for regulation of mobile

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[86] Verizon *Ex Parte*, March 2, 2004. Letter from Leslie Joseph Martinkovics, Director, International Regulatory Affairs, Verizon, to Marlene H. Dortch, Secretary, FCC (dated Mar. 2, 2004) Annex D, Charles River Associates, *Economic Analysis of Fixed-To-Mobile Call Termination Charges* (March 28, 2003) (Charles River Report).

[87] "[W]hen retail markets for mobile services are sufficiently competitive, regulation of FTM [fixed-to-mobile] call termination rates is unnecessary, whereas with insufficient competition, some regulation of mobile rates is warranted." Charles River Report at 3, 40.

[88] Charles River Report at 1.

[89] Charles River Report at 28-29.

[90] Ofcom Consultation Statement, Chapter 2, *available at* http://www.ofcom.org.uk/consultations/past/wmvct/wmvct.pdf.

[91] The Charles River Report's use of the term "efficient," rather than "cost-based," indicates to us that identifying reasonable mobile termination rates involves more than studies of the incremental cost of mobile termination service. According to the report, other kinds of factors must also be considered, such as appropriate mark-up factors to reflect the recovery of common costs, the joint valuation of phone calls by the caller and called party, as well as consideration of social goals such as universal service and investment in telecommunications infrastructure. Charles River Report.

[92] *Id.* at 40.

[93] *Id.*

[94] *Id.* at 20.

[95] *Id.* at 25.

termination rates in the case where competition is insufficient, including Ramsey pricing, international "benchmarking" of mobile termination rates (*i.e.*, using mobile termination rates found reasonable in one country or several countries as reference points for evaluating the reasonableness of mobile termination rates in other countries),[96] LRIC-based approaches, price caps, and top-down models,[97] and concludes that only price caps, in which mobile network operators are afforded flexibility in setting mobile termination rates, are likely to be efficient. The report argues that the expense and effort required to produce a reliable LRIC model are very substantial, may result in "dueling" cost studies, and may not result in the calculation of efficient mobile termination rates.[98]

34. The Charles River Report also asserts that "benchmarking" using mobile termination rates derived from European proceedings is of limited use when countries being compared are fundamentally different from European countries (*e.g.*, Latin America and other less-developed countries may have lower mobile penetration rates than European countries).[99] According to the report, there are many differences among countries that benchmarking cannot take into account, including differences in teledensity, in peak/off-peak ratios, in call duration, in usage volumes, and in input prices.[100]

35. We seek comment on whether a finding that a foreign mobile network operator has market power in a relevant market is a prerequisite for evaluating the reasonableness of mobile termination rates. If so, which market definition is most appropriate: Ofcom's, the Charles River Report's, or an alternative definition?[101] As a practical matter, is it possible to evaluate the competitiveness of the mobile sector of the 161 countries that currently have mobile termination rates?[102] If so, what method should we use? We also seek comment on whether efficient mobile termination rates are synonymous with competition, as argued in the Charles River Report, or whether mobile termination rates could be excessive even in

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[96] In this notice, we use the term "reference rates" instead of "benchmarking" to avoid confusion with the Commission's benchmarks.

[97] The term "top-down" models, as used in the Charles River Report, means using firms' accounting data to assign costs to rate elements. Charles River Report at 45.

[98] Charles River Report at 44. According to the report, LRIC-based approaches, especially engineering models, are extremely expensive to develop, maintain, and update, and give rise to protracted regulatory proceedings. Further, the report notes that the costs produced by these models are not related to efficient prices for mobile termination rates in a simple way, so that simple mark-ups of LRIC estimates are unlikely to be efficient. Charles River Report at 4. A similar point is made by Crandall and Sidak who argue that "the search for the socially optimal mobile termination rate presents regulators with several insoluble empirical and practical problems" regarding network design, switching volumes, capacity to serve peak calling periods, and the type of switches used, and mark-up factors to contribute to fixed and common costs, all in a highly politicized environment. Crandall and Sidak at 297.

[99] Charles River Report at 4.

[100] Charles River Report at 42-43.

[101] We observe that Ofcom's identification of the relevant market as each mobile network operator's individual provision of mobile termination services leads immediately to the conclusion that mobile network operators have market power over mobile termination and likely leads to the conclusion that mobile termination rates are unreasonably high. *See supra* ¶ 30 and accompanying notes. The Charles River Report's identification of the relevant market as the totality of retail mobile services, on the other hand, requires a detailed analysis of the competitiveness of each foreign country's mobile sector in order to determine whether mobile network operators have the market power to set above-cost or "inefficient" rates. Charles River Report at 26.

[102] *See* Appendix E.

competitive markets. Also, are the findings by Ofcom with regard to cost-based rates for the United Kingdom applicable to mobile termination in other CPP countries?

36. The Commission has previously noted the unique difficulties presented by the case of terminating access, where the called party is the one that chooses the access provider, but does not pay the provider's terminating access service charge.[103] In the context of the domestic wireline local exchange market, the Commission found that "once an end user decides to take service from a particular LEC, that LEC controls an essential component of the system that provides interexchange calls, and it becomes the bottleneck for interexchange carriers that wish to complete calls to, or carry calls from, that end user."[104] The Commission concluded that this market structure, combined with other factors, enabled competitive local exchange carriers to "impose excessive access charges."[105] Is this analysis relevant to mobile termination rates in CPP countries?

37. The Charles River Report and some economists argue that the use of a LRIC cost standard to accurately estimate efficient mobile termination rates is not practically feasible.[106] The practical problems of using a LRIC cost standard (including lack of data) were also the reason that the Commission chose to rely instead on a TCP method in the *Benchmarks Order*. On the other hand, the United Kingdom has employed a LRIC cost standard to estimate mobile termination rates in the United Kingdom, and various private parties (*e.g.*, Sprint and Analysys) have undertaken LRIC cost studies of mobile termination rates in different countries.[107] We seek comment on whether it is feasible to evaluate foreign mobile termination rates by employing a LRIC cost standard. If not, is some other cost standard a reasonable alternative?

38. Assuming that use of a LRIC cost standard would be a reasonable approach for evaluating mobile termination rates and mobile settlements, we seek comment on various details of using a LRIC cost standard, *e.g.*, the specification of network design, economic depreciation, the cost of capital,

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[103] *Access Charge Reform; Reform of Access Charges Imposed by Competitive Local Exchange Carriers*, CC Docket 92-262, Seventh Report and Order and Further Notice of Proposed Rulemaking, 16 FCC Rcd 9923, 9934-935, ¶ 28 (2001) ("*Access Charge Reform Order*"); *see also Petitions of Sprint PCS and AT&T Corp. for Declaratory Ruling Regarding CMRS Access Charges*, WTB Docket No. 01-316, Declaratory Ruling, 17 FCC Rcd 13192, 13196-197, ¶ 10 (2002).

[104] *Access Charge Reform Order*, 16 FCC Rcd at 9935, ¶ 30.

[105] *Id.* at 9935-936, ¶ 31.

[106] *See supra* n.98.

[107] *See, e.g.*, Sprint, and Analysys, Ltd., a U.K. consultancy, on the cost of mobile termination in various countries. *See* New York Public Service Commission, *Petition of Sprint Spectrum, L.P. d/b/a Sprint PCS Pursuant to 225(b) of the Telecommunications Act of 1996 to Establish an Intercarrier Agreement with Verizon New York, Inc.*, Case 01-C-0767, Order on Petition for Rehearing, December 3, 2002, at 2 (arguing that, based on a detailed LRIC study it submitted to the PSC, the cost for terminating one minute of traffic on its mobile network in New York should be $US 0.039 per minute). *See* Florida Public Service Commission, *In re: Petition of Sprint Spectrum, L.P. d/b/a Sprint PCS for Arbitration of Certain Terms and Conditions of a Proposed Agreement with BellSouth Telecommunications, Inc. Pursuant to 225 of the Telecommunications Act*, Docket No. 000761-TP, Prehearing Order, Order No. PSC-00-2535-PHO-TP, December 28, 2000, at 9 (arguing that, based on its cost study, the LRIC rate should be approximately $US 0.066 per minute). Analysys developed a LRIC model for Oftel as part of Oftel's review of charge controls on calls to mobile phones during 2000 and 2001. *See* Analysys, *The Lyric Model of UK Mobile Network Costs* (2002), *available at* http://research.analysys.com/.

estimates of overheads (common costs), mark-ups for the recovery of overheads, estimates of demand and demand elasticity, and the potential inclusion of a network externality factor.[108]

39. Does applying any single cost standard to 161 individual countries with mobile termination rates and mobile settlements pose problems with regard to special economic conditions in certain countries?[109] For instance, in the *Benchmarks Order*, we established less onerous benchmarks for low-income countries based on the theory that such benchmarks would be less disruptive to their economies. In the case before us, would it be acceptable for wireless carriers in low-income countries to charge above-cost mobile termination rates for similar reasons? Would it be appropriate for countries with low mobile penetration rates to charge above-cost mobile termination rates as part of a policy to promote the build-out of mobile networks?[110]

40. ***Impact of Mobile Surcharges on U.S. Customers.*** At this point, we have not determined whether foreign mobile termination rates raise concerns with respect to U.S. customers and competition in the U.S.-international telecommunications services market. Nor have we determined what the proper standard is for analyzing mobile termination rates or whether to apply such a standard. We note, however, that Ofcom has previously determined that cost-based mobile termination rates in the United Kingdom should be the equivalent of about $0.10 per minute and that AT&T estimated in its R-TCP study that average cost-based mobile termination rates should be no higher than about $0.08 per minute world wide.[111] Additionally, WorldCom's (MCI) cost-based analysis estimates that U.S. customers overpay for international calls to mobile phones by more than $368 million per year.[112]

41. Based on these and other available data, we seek additional information on the effect of alleged overcharges on U.S. customers. Are U.S. consumers being harmed by these surcharges? Commenters who believe that mobile surcharges are excessive should provide the Commission with information quantifying the total amount of overcharges paid by U.S. customers annually. Commenters should also provide the basis for their calculations. Because surcharges vary from route to route, data provided by commenters should be route-specific and include an estimate of U.S. demand terminating on mobile phones on each route, current surcharges for the route, and alternative surcharges that the commenters believe to be more reasonable. If the Commission, using any of the methods discussed in this section, finds that rates are discriminatory or otherwise harm U.S. consumers, what options are open to it under existing law?

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[108] *See supra* n.85.

[109] *See* Appendix E.

[110] Many western European countries have mobile termination rates that are among the highest in the world, although they are high-income economies with high levels of mobile penetration. *See* Appendix B and C.

[111] Ofcom Consultation Statement; AT&T Feb 5, 2004 *Ex Parte* Letter at 1, 18 (in many cases, mobile surcharges exceed US$0.07-$0.10 per minute); *see also* AT&T Feb. 18 2004 *Ex Parte* Letter, at 3-4

[112] WorldCom (MCI) Comments at 22. According to WorldCom (MCI), this estimate was derived using publicly available FCC section 43.61 traffic volume data and an assumption that 21% of global calls terminate on mobile networks, and then comparing mobile settlement rates to existing LRIC cost studies for mobile termination. *Id.* at n.22. We note that the total cost of international calling to U.S. customers in 2002 was approximately 9.4 billion dollars. See 2002 International Telecommunications Data (43.61 Annual Report).

IV. CONCLUSION

42. By this *NOI*, we seek to develop a record on foreign mobile termination rates that will enable us to assess properly the effects of foreign mobile termination rates on U.S. customers and competition in the U.S.-international services market. We seek comment on the data and information presented in this *NOI* and request any additional foreign mobile termination rate data. We are particularly interested in receiving comments on the framework for understanding whether foreign mobile termination rates are unreasonably high. We encourage all interested parties to respond to the questions and requests contained in this *NOI*.

V. PROCEDURAL ISSUES

A. Filing of Comments and Reply Comments

43. We invite comment on the issues and questions set forth above. Pursuant to sections 1.415 and 1.419 of the Commission's rules, 47 C.F.R. §§ 1.415, 1.419, interested parties may file comments on or before 60 days after publication in the Federal Register publication, and reply comments on or before 90 days after publication in the Federal Register.[113] Comments may be filed using the Commission's Electronic Comment Filing System (ECFS) or by filing paper copies.[114]

44. Comments filed through the ECFS can be sent as an electronic file via the Internet to http://www.fcc.gov/cgb/ecfs/. Generally, only one copy of an electronic submission must be filed. If multiple docket or rulemaking numbers appear in the caption of this proceeding, however, commenters must transmit one electronic copy of the comments to each docket or rulemaking number referenced in the caption. In completing the transmittal screen, commenters should include their full name, U.S. Postal Service mailing address, and the applicable docket or rulemaking number. Parties may also submit an electronic comment by Internet e-mail. To get filing instructions for e-mail comments, commenters should send an email to ecfs@fcc.gov, and should include the following words in the body of the message, "get form." A sample form and directions will be sent in reply.

45. Parties who choose to file by paper must file an original and four copies of each filing. If more than one docket or rulemaking number appears in the caption of this proceeding, commenters must submit two additional copies for each additional docket or rulemaking number. Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. (We note that we continue to experience delays in receiving U.S. Postal Service mail). The Commission's contractor, Natek, Inc., will receive hand-delivered or messenger-delivered paper filings for the Commission's Secretary at 236 Massachusetts Avenue, N.E., Suite 110, Washington, D.C. 20002. The filing hours at this location are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes must be disposed of before entering the building. Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743. U.S. Postal Service first-class mail, Express Mail, and Priority Mail should be addressed to 445 12th Street, SW, Washington, D.C. 20554. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission. Parties also should send four (4) paper copies of their filings to Alexandra Field, Francis Gutierrez and Mark Uretsky, International Bureau, Federal Communications Commission, 445 12th

[113] Commenters that wish confidential treatment of their submissions should request that their submission, or specific part thereof, be withheld from public inspection. 47 C.F.R. § 0.459 (2003).

[114] *See Electronic Filing of Documents in Rulemaking Proceedings*, 63 Fed. Reg. 24121 (1998).

Street, S.W., Washington, D.C. 20554. For additional information on this proceeding, contact Alexandra Field, alexandra.field@fcc.gov, Francis Gutierrez, francis.gutierrez@fcc.gov, or Mark Uretsky, mark.uretsky@fcc.gov of the International Bureau, Policy Division, (202) 418-1460.

B. *Ex Parte* Presentations

46. This is an exempt proceeding in which *ex parte* presentations are permitted (except during the Sunshine Agenda period) and need not be disclosed.[115]

47. This document does not contain proposed information collection(s) subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. In addition, therefore, it does not contain any new or modified "information collection burden for small business concerns with fewer than 25 employees," pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. 3506(c)(4).

VI. ORDERING CLAUSES

48. IT IS ORDERED that, pursuant to the authority contained in 47 U.S.C. Sections 151, 4(i), 201, 202, 203, 204, 205, 211, 218, 303(r), 403 this *Notice of Inquiry* is ADOPTED.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch

Marlene H. Dortch
Secretary

[115] 47 C.F.R. § 1.1204(b)(1) (2003).

Appendix A

List of Commenters in the *ISP Reform* Proceeding

Asociación Hispanoamericano de Centros de Investigación y Empresas de Telecomunicaciones (*ACHIET*)
Asociación Nacional de Industrias Electrónicas y de Telecomunicaciones (*ANIEL*)
Asociación de Empresas de Telecomunicaciones de la Comunidad Andina (*ASETA*)
AT&T Corp. (*AT&T*)
AT&T Wireless Services, Inc. (*AT&T Wireless*)
BellSouth Corporation (*BellSouth*)
Cable & Wireless USA, Inc. (*C&W*)
Caribbean Association of National Telecommunications Organizations (*CANTO*)
The City of Laredo, Texas (*Laredo*)
Cellular Telecommunications & Internet Association (*CTIA*)
Competitive Telecommunications Association (*CompTel*)
Delegation of the European Commission (*EC*)
European Telecommunications Network Operators' Association (*ETNO*)
The Government of Japan
GSM Europe
International Telecommunications Users Group (*INTUG*)
Jeffrey H. Rohlfs
KDDI Corporation (*KDDI*)
KPN Mobile, N.V.
National Telecommunications and Information Administration (*NTIA*)
NTT DoCoMo, Inc. (*NTT*)
Orange SA (Orange)
Orbitel S.A.E.S.P. (*Orbitel*)
PanAmSat Corporation (*PanAmSat*)
PCCW Limited (*PCCW*)
Royal KPN NV (*KPN*)
Sprint Communications Company, LP (*Sprint*)
Telecom Colombia
Telecom Italia
Telefónica, S.A.
T-Mobile USA, Inc. (*T-Mobile*)
United Kingdom, Department of Trade and Industry
Videsh Sanchar Nigam Limited (*VNSL*)
Verizon
Vodafone
WorldCom (*MCI*)

Appendix B

National Regulatory Authority Action in Other Countries[1]

Australia. Australia's regulatory agency, the Australian Competition & Consumer Commission (ACCC), has initiated a review of mobile termination rates.[2] On June 30, 2004, the ACCC affirmed its draft recommendation urging a reduction in the mobile termination fees regime in Australia's telecom market. According to the decision, the termination fees should decrease to A$0.21 per minute, ultimately reaching A$0.12 per minute by 2007.

* **Austria.** In accordance with the 1997 Directives, the Austrian telecommunications regulator, Telekom Control Kommission (TKK) regulates the mobile termination rate of all mobile network operators. In 2003, TKK found that mobile network operators in Austria do not possess significant market power in the interconnection market. The TKK continues to regulate mobile termination rates based on competition law considerations to establish reasonable rates and consistent with past regulatory intervention.[3] To that end, a fully allocated cost orientation regime is used to set mobile termination rates. Austrian mobile termination rates also reflect network externalities and cost savings due to large economies of scale enjoyed by the mobile network operators.[4] The TKK has ordered mobile network operators to pass on 50 percent of these cost savings to mobile subscribers. The TKK has yet to undertake a market analysis of the mobile call termination market required by the Framework Directive.

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[1] Member countries of the European Union (EU) are marked with an asterisk symbol (*). The decisions to regulate mobile termination rates by national regulatory authorities in the European Union (EU) are influenced by a number of Directives enacted by the European Commission (EC) in 1997 and 2002 to spur competition in the telecommunications markets. The 1997 Directives generally limit regulation to operators having "significant market power" in telecommunications markets, including the interconnection market. In 2002 the EC issued a new directive on a common regulatory framework for electronic communications network and services (Framework Directive) in order to promote regulatory harmonization across Europe and spur competition in the electronic communications networks and services markets by reducing entry barriers. *Directive 2002/21/EC of the European Parliament and of the Council of March 7, 2002, on a common regulatory framework for electronic communications networks and services*, OJ L 108/33 at 1 (April 24, 2002) (Framework Directive). The Framework Directive requires national regulatory authorities to define relevant product and geographic markets appropriate to national circumstances and to undertake a review of those markets in accordance with the Directives and principals of competition law as soon as possible. It also limits the national regulatory authorities' ability to impose *ex ante* regulatory obligations on operators in markets where effective competition is slow to emerge and in markets where one or more operators possess significant market power. Commission of the European Communities, *Commission Recommendation: On Relevant Product and Service Markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on common regulatory framework for electronic communication networks and services (C(2003)497). Ex ante regulatory obligations include obligation to negotiate, provide service at cost-based prices and adopt non-discriminatory practices* (February 11, 2003) at 5, *available at* http://europa.eu.int/information_society/topics/ telecoms/regulatory/ maindocs/documents/recomen.pdf.

[2] *See* Australian Competition & Consumer Commission, *Mobile Services Review; Mobile Terminating Access Services* (June 2004), *available at* http://www.accc.gov.au/content/index.phtml/itemId/520485.

[3] Cullen International, *Table 31 - Mobile termination rates - Regulation under previous ONP regulatory framework Report, available at* http://www.cullen-international.com/documents/cullen/telecom/europe/states/ tables/mobsmp.cfm (Cullen International Report).

[4] *See supra* ¶ 30 for a brief discussion of network externality.

* **Belgium**. In 2003, the Belgian regulator, Belgian Institute for Postal Services and Telecommunications (BIPT), found that the incumbent and second largest mobile network operator had significant market power in the interconnection market and imposed price caps on its mobile termination rates. The BIPT is expected to achieve a 52 percent reduction in mobile termination rates between 2001 and 2004. A fully allocated historical cost is used to set the mobile termination rates with a markup allowed for customer retention costs. BIPT has not completed the required market analysis of its mobile call termination market.

* **Denmark and Luxembourg.** Mobile termination rates in Denmark and Luxembourg are unregulated because no mobile network operators have been found to have significant market power.

* **European Union.** In 2003, in accordance with the Framework Directive,[5] the European Commission published its initial list of markets (including call termination on mobile networks) that lack effective competition and are, hence, susceptible to *ex ante* regulation.[6] In defining the market for mobile call termination, the EC relied on the competition law concept of relevant market, which is defined as the smallest area of product, geographic and functional space over which a hypothetical monopolist could exert a significant degree of market power. A hypothetical monopolist's ability to raise rates in the market depends on whether supply and demand substitution is possible in that market. The EC reasoned that "[a]t a retail level a call to a given user or user's terminal is not a substitute for a call to another user and this limitation on demand substitution follows through at the wholesale level . . . In respect of supply substitution, if the supplier of call termination raises its price, it is not easy for alternative suppliers to switch to supply that market because they would need the SIM card details of that user to do so."[7] The EC, therefore, concluded that, under a CPP regime, call termination on individual networks was the appropriate market definition.[8] This also implies that each mobile network operator is the sole supplier of termination services on each network market. The EC further argued that the possibility of each mobile network operator having market power in the call termination market would depend on the existence of countervailing buying power that would render any price increase by the operator unprofitable. It is the responsibility of each national regulatory authority to decide whether mobile network operators have significant market power in the national mobile call termination market.

In a recent report on the implementation of this new regulatory framework, the EC noted that, in August 2003, the interconnection charge for terminating a fixed call on mobile networks was a weighted average of 15.93 euro-cents for the 16 European mobile operators declared by the national regulatory authority to have significant market power in the market for interconnection. According to the report, average interconnection charges for operators with significant market power decreased 15.3 percent between 2002 and 2003, while rates for non-significant market power operators increased slightly during the same

[5] *See supra* n.1 of this Appendix.

[6] Commission of the European Communities, *Commission Recommendation; On Relevant Product and Service Markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communication networks and services (Text with EEA relevance) – Explanatory Memorandum* (2003), at 32, *available at* http://europa.eu.int/information_society/topics/telecoms/regulatory/maindocs/documents/explanmemoen.pdf.

[7] *Id.*

[8] *Id.* at 34.

time period.[9] The report attributes this reduction in rates to regulatory intervention by the national regulatory authorities that required operators with significant market power to set cost-based termination rates. According to the report, mobile operators that have significant market power accounted for 45 percent of mobile subscribers in 2003 compared with 41 percent of subscribers in 2002.[10]

* **France.** In accordance with the 1997 Directives, the French regulator, Autorité de Régulation des Télécommunications (ART), concluded that the two mobile network operators have significant market power in the interconnection market. Of note, since 1999, ART has intervened three times to set the mobile termination rate levels.[11] For example, in 2000, in response to a dispute brought by WorldCom against Orange, a mobile operator in France, ART asked Orange to reduce its mobile termination rate by 20 percent. ART uses a fully distributed cost orientation to set the mobile termination rates. In May 2004, ART issued a report on its more extensive public consultation on the mobile call termination market.[12] It adopted the EC's recommendation that the relevant market be defined as the wholesale voice call termination markets on each of the mobile operator's individual networks. It also committed to reducing mobile termination rates over the next three years. Mobile operators in Metropolitan France will be subject to price controls and are obligated to publish a reference offer.[13] ART committed itself to establishing target levels and intermediate ceiling prices during 2004. Major mobile operators in overseas departments and territories are subject to the same obligations; mobile operators with fewer than 3,000 clients are only subject to obligations proportionate to their size.

* **Finland.** Retail fixed-to-mobile termination rates are unregulated and are generally set by mobile network operators. One unusual feature in Finland is the degree of consumer information and price transparency of mobile termination rates. For example, the caller receives two bills for terminating calls on mobile networks – one from the originating fixed operator and the other from the terminating mobile operator. This arrangement is believed to result in increased transparency and lower mobile termination rates.[14] In 2004, following the final market analysis under the Framework Directive, the Finnish regulator, Finnish Communications and Regulatory Authority (FICORA), found four mobile operators exercised significant market power in the mobile call termination market. FICORA imposed a number of

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[9] Commission of the European Communities, *Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions, European Electronic Communications Regulation and Markets 2003, Report on the Implementation of the EU Electronic Communications Regulatory Package* (November 19, 2003), at 18, *available at* http://europa.eu.int/eur-lex/en/com/cnc/2003/com2003_0715en01.pdf (European Commission Report).

[10] *Id.*

[11] Cullen International Report.

[12] *See Autorité de régulation des télécommunications, Consultation publique sur l'analyse du marché de gros de la terminaison d'appel vocal sur les réseaux mobiles* ("Public Consultation on the Mobile Call Termination Market*") (May 28, 2004), available at* http://www.art-telecom.fr/publications/c-publique/consult-16av04.pdf.

[13] *See Summary of the public consultation on the mobile call termination market* (May 2004), *available at* http://www.art-telecom.fr/eng/index.htm ("The reference offer must include at least one offer similar to that proposed in most other European countries, *i.e.*, an interconnection offer which allows access from each interconnection point to all the mobile operator's subscribers").

[14] Electronic Communications Committee within the Europe Conference of Postal and Telecommunications Administrations, *Fixed to Mobile Interconnection*, ECC Report 21, (November 2002), at 9, *available at* http://www.ero.dk/documentation/docs/doc98/official/pdf/ECCREP021.PDF.

remedies on the two largest mobile operators, including cost-based interconnection, non-discrimination, and accounting separation. A number of mobile network operators challenged FICORA's finding in the High Administrative Court, and a decision on that matter is pending.

* **Germany.** The German national regulatory authority, Regulatory Authority for Telecommunications and Posts (RegTP), concluded that the mobile network operators in Germany do not possess significant market power in the market for public mobile telephony or in the market for interconnection. RegTP reasoned that mobile call termination is part of an overall mobile telecommunication market and, thus, any change in interconnection and termination rates affects the length of a mobile call. According to RegTP, since, the decision to subscribe to a mobile phone is affected by termination charges, mobile operators cannot act independently and, therefore, lack market power.[15] Thus, RegTP does not regulate fixed-to-mobile termination rates because no mobile network operators in Germany were found to have significant market power. Recently, several mobile network operators in Germany have reached an agreement with Deutsche Telekom's wire line unit, T-Com, to lower mobile termination rates in December 2004 and 2005. RegTP has stated that lower mobile termination rates in Germany can be achieved without any regulatory intervention and that the German mobile termination rates are approaching the European average of €0.10 per minute.[16] RegTP raised some concerns about possible adverse outcome of regulation of mobile rates on telecom competition, including higher up-front and switching costs that may reduce competition among mobile operators.[17]

* **Greece.** The Greek regulator, National Telecommunications and Post Commission (EETT), recently completed a public consultation and market analysis of the mobile termination market. It concluded that there are four mobile termination markets and each mobile network operator has significant market power in its own market.[18] The remedies suggested by the regulator include suspension of minimum charges on call termination rates, price caps on mobile termination rates for a period of three years, and accounting separation. As a result of consultations between mobile network operators and EETT, the four mobile network operators voluntarily reduced their mobile termination rates in 2003. EETT favors a LRIC methodology in setting mobile termination rates.

* **Ireland.** The Irish regulator, Commission for Communications Regulation (ComReg), has defined wholesale mobile voice call termination in individual markets as the relevant market. ComReg proposes to designate four mobile network operators to have significant market power. ComReg is considering imposing several remedies, including cost-based mobile termination rates using a LRIC method, non-discrimination, and transparency. The mobile network operators with market power have reduced their mobile termination rate on average by five percent.[19]

* **Italy.** The Italian regulator, Autorita per le Garanzie nelle Comunicazioni (AGCOM), identified two mobile network operators with significant market power in the interconnection market and reduced their mobile termination rates in 1999. In February 2003, AGCOM decided to set maximum mobile

[15] Charles River Associates, *Regulation of Mobile Call Termination Charges: International Approaches*, 24 (August 14, 2003) (Charles River).

[16] Cullen International Report.

[17] Charles River at 25.

[18] Cullen International Report.

[19] *Id.*

termination rates. Since June 2003, the mobile termination rate has been set at 14.95 euro cents. The regulator also intends to implement incremental cost-based mobile termination rates and reduce rates in 2004 and 2005 by 10 percent per year, minus inflation.[20]

Japan. Mobile termination rates in Japan are unregulated, and, until November 2002, mobile termination rates were set by the mobile operator. In November 2002, the Ministry of Public Management, Home Affairs, Posts, and Telecommunications (MPHPT) transferred the right to set retail rates for fixed-to-mobile calls from wireless operators to wireline operators. Currently, Japanese customers who place calls from wireline phones to mobile phones can use a prefix to select a mobile company with which to place the call, thus, giving them an opportunity to choose the rate they wish to pay. Although MPHPT's decision did not go into effect until June 2003, fixed-to-mobile rates declined in anticipation of the rule change. In March 2004, NTT DoCoMo cut its mobile termination rates between three and four percent, retroactive to April 2003 (to approximately US$0.11 per minute).

* **The Netherlands.** The Dutch regulator, Onafhankelijke Post en Telecommunicatie Authoriteit (OPTA), has not designated any mobile network operator as having significant market power. However, OPTA has reduced mobile termination rates. OPTA uses a "European best practice rate" that is charged by non-significant market power operators to set mobile termination rates. Recently, the Dutch mobile network operators have agreed to reduce their mobile termination rates in three steps. The EC is investigating whether mobile termination rates charged by one of the mobile network operators constitute an abuse of market power. The EC also reports that the fixed-to-mobile termination rate increased by ten percent for one operator during 2003.[21]

New Zealand. In April 2004, the New Zealand Commerce Commission (ComCom) announced it would investigate whether mobile phone call termination rates should be regulated based on complaints about unreasonably high charges for fixed-to-mobile calls. Subsequently in June 2004, the ComCom released an Issues Paper identifying issues that may be relevant to its investigation and solicited responses from interested parties.[22] The Commission is expected to complete its investigation with a final report by late November 2004. In the Issue Paper, ComCom "has formed the preliminary view that the market for mobile termination is a distinct market(s) as it is purchased by other networks at a wholesale level for purposes of interconnection independent of any additional mobile services."[23] Additionally, ComCom is concerned that limited competition in the mobile market may permit mobile network operators to set mobile termination rates well above cost.

Peru. In January 2004, the Peruvian regulator, Organismo Supervisor de Inversión Privada en Telecomunicaciones (OSIPTEL), announced a reduction of mobile termination rates by 30 percent over the next 18 months.

South Korea. According to the USTR's 2004 1377 Review of the Telecommunications Trade Agreements report, the South Korean government is considering using LRIC methodology to set charges for mobile networks. USTR also notes that the mobile termination rates in South Korea have declined

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[20] *Id.*

[21] European Commission Report at 18.

[22] *See* Commerce Commission, *Telecommunications Act 2001: Schedule 3 Investigations into Regulation of Mobile Termination* (June 2004).

[23] *Id.* at ¶ 7.

steadily over the past three years to approximately US$0.035 per minute currently, and are now among the lowest in the world.[24] When the Korean regulator, Ministry of Information and Communication (MIC) applied a historical cost model verifying the terminating cost, mobile termination charges had steadily declined from US$0.05 cents in 2000 to US$0.036 cents in 2003. As of January 2004, South Korea is calculating interconnection costs using the LRIC model. Under this model, mobile interconnection chares will be reduced to US$0.028 cents in 2004 and to US$0.027 cents in 2005.[25]

* **Spain.** The Spanish regulator, Comisión del Mercado de las Telecomunicaciones (CMT), found that two mobile operators have significant market power in the national interconnection market. In 2002, CMT set maximum mobile termination rates, which resulted in approximately a 17 percent reduction in the mobile termination rates. This reduction was in addition to the 17 percent reduction of mobile termination rates that the mobile network operators initiated in 2001. Spain has yet to undertake a market analysis of its mobile call termination market as required by the Framework Directive.[26]

* **Sweden.** The Swedish regulator, Post and Telestyrelsen (PTS), has already completed its market analysis and found that five mobile network operators posses significant market power in the voice call termination market. In 2004, PTS proposed to impose a forward-looking LRIC cost methodology to set mobile termination rates for the next four years. Prior to this action and beginning in 1999, PTS intervened to require mobile network operators to lower their mobile termination rates.

Switzerland. Mobile termination rates in Switzerland are unregulated because the national regulatory authority has determined that no mobile network operators have significant market power.

* **United Kingdom.** In 1998, the Office of Communication's (Ofcom) predecessor regulator, Oftel, began an investigation of mobile call termination charges by referral from the Monopolies and Mergers Commission. In 2001, Oftel proposed price controls on mobile termination charges, a proposal contested by mobile operators. The matter was referred to the Competition Commission, which published a report in January 2003 supporting Oftel's conclusions. In May and December 2003, Oftel initiated consultations with interested parties for a market review, as required under the Communications Act of 2003. Ofcom has concluded that direct controls should be imposed on the charges to operators for terminating calls on the 2G mobile networks of Vodafone, O2, Orange, and T-Mobile. For operators that use the 900MHz bands – Vodafone and O2 – Ofcom has concluded that their average termination charges should be reduced from approximately 8 pence per minute (ppm) to 5.63 ppm. For operators that use the 1800MHz bands – T-Mobile and Orange – Ofcom has concluded that their average termination

[24] U.S. Trade Representative, Results of 2004 Section 1377 Review of Telecommunications Trade Agreements (April 7, 2004).

[25] The Ministry of Information and Communication, Republic of Korea, *Public Notice, The New Mobile Interconnection Charges*, *available at* http://www.mic.go.kr/index.jsp (accessed on July 12, 2004).

[26] *Id.*

charges should be reduced from approximately 9.5 ppm to 6.31 ppm. All four operators will be required to ensure that their average charges reflect these reductions in the period between the beginning of September 2004 and the end of March 2005. Average charges must then remain at that level until March 2006. Mobile operators will be allowed to continue to vary charges for mobile termination according to the time of day.

Appendix C[1]

Foreign Mobile Termination Rate (2004)
(Rates in Euros and Dollars)

Country	Average MTR in € / min			Average MTR per minute in U.S. $/ min		
	Peak	Off-peak	Total	Peak	Off-peak	Total
Austria	€ 0.1282	€ 0.1282	€ 0.1282	$0.1588	$0.1588	$0.1588
Belgium	€ 0.1637	€ 0.1146	€ 0.1413	$0.2027	$0.1419	$0.1750
Cyprus	€ 0.0928	€ 0.0928	€ 0.0928	$0.1149	$0.1149	$0.1149
Czech Rep	€ 0.1106	€ 0.1106	€ 0.1106	$0.1370	$0.1370	$0.1370
Denmark	€ 0.1581	€ 0.0810	€ 0.1195	$0.1958	$0.1003	$0.1480
Estonia	€ 0.1857	€ 0.1857	€ 0.1857	$0.2300	$0.2300	$0.2300
Finland	€ 0.1290	€ 0.1290	€ 0.1290	$0.1598	$0.1598	$0.1598
France	€ 0.1603	€ 0.1334	€ 0.1535	$0.1985	$0.1652	$0.1901
Germany	€ 0.1505	€ 0.1505	€ 0.1505	$0.1864	$0.1864	$0.1864
Greece	€ 0.1800	€ 0.1800	€ 0.1800	$0.2229	$0.2229	$0.2229
Hungary	€ 0.1626	€ 0.0906	€ 0.1381	$0.2014	$0.1122	$0.1710
Iceland	€ 0.1240	€ 0.1149	€ 0.1194	$0.1536	$0.1423	$0.1479
Ireland	€ 0.1333	€ 0.0999	€ 0.1166	$0.1651	$0.1237	$0.1444
Italy	€ 0.1756	€ 0.1374	€ 0.1572	$0.2175	$0.1702	$0.1947
Latvia	€ 0.1278	€ 0.1278	€ 0.1278	$0.1583	$0.1583	$0.1583
Lithuania	€ 0.1381	€ 0.0705	€ 0.1043	$0.1710	$0.0873	$0.1292
Luxembourg	€ 0.1500	€ 0.1300	€ 0.1400	$0.1858	$0.1610	$0.1734
Malta	€ 0.1762	€ 0.1762	€ 0.1762	$0.2182	$0.2182	$0.2182
Netherlands	€ 0.1622	€ 0.1622	€ 0.1622	$0.2009	$0.2009	$0.2009
Norway	€ 0.0893	€ 0.0893	€ 0.0893	$0.1106	$0.1106	$0.1106
Poland	€ 0.1560	€ 0.0955	€ 0.1258	$0.1932	$0.1183	$0.1558
Portugal	€ 0.2364	€ 0.1748	€ 0.2207	$0.2928	$0.2165	$0.2733
Slovak Rep	€ 0.1282	€ 0.1083	€ 0.1236	$0.1588	$0.1341	$0.1531
Slovenia	€ 0.2100	€ 0.1000	€ 0.1550	$0.2601	$0.1238	$0.1920
Spain	€ 0.1667	€ 0.0906	€ 0.1342	$0.2064	$0.1122	$0.1662
Sweden	€ 0.1231	€ 0.1060	€ 0.1174	$0.1524	$0.1313	$0.1454
Switzerland	€ 0.2221	€ 0.2221	€ 0.2221	$0.2750	$0.2750	$0.2750
UK	€ 0.1736	€ 0.0678	€ 0.1207	$0.2150	$0.0840	$0.1495

Source: International Regulatory Group (IRG) Data on Mobile Termination Rates, as of January 31, 2004.
Note: Conversion factor is based on January 30, 2004 currency ratio, $1.2384 per €.

[1] Independent Regulators Group, *IRG Snapshot of Mobile Termination Rates* (Jan. 31, 2004), *available at* http://irgis.icp.pt/site/en/conteudos.asp?id_conteudo=21309&id_l=274&ln=en&id_ area=277&ht=Documents.

Appendix D

Mobile and Fixed Settlement Rates
Sorted by Mobile/Fixed Ratio

Region	Country	Mobile ($/Min)	Fixed ($/Min)	Mobile/Fixed Ratio
Europe:				
Western Europe:				
	Netherlands	$0.1590	$0.0104	15.29
	Sweden	$0.1300	$0.0090	14.44
	Belgium	$0.1480	$0.0120	12.33
	Norway	$0.1292	$0.0115	11.23
	Spain	$0.1460	$0.0135	10.81
	Italy	$0.1390	$0.0132	10.53
	Germany	$0.1280	$0.0125	10.24
	France	$0.1380	$0.0140	9.86
	Ireland	$0.1338	$0.0140	9.56
	Switzerland	$0.1635	$0.0173	9.45
	United Kingdom	$0.1175	$0.0125	9.40
	Denmark	$0.1240	$0.0136	9.12
	Austria	$0.1230	$0.0143	8.60
	Portugal	$0.1620	$0.0207	7.83
	Finland	$0.1240	$0.0200	6.20
	Luxembourg	$0.0953	$0.0169	5.64
	Greece	$0.1039	$0.0314	3.31
	Iceland	$0.0755	$0.0350	2.16
	Cyprus	$0.1400	$0.0650	2.15
	Monaco	$0.0945	$0.0440	2.15
	Faroe Islands	$0.0830	$0.0770	1.08
	Liechtenstein	$0.0320	$0.0300	1.07
	Greenland	$0.2290	$0.2530	0.91
Eastern Europe:				
	Poland	$0.1470	$0.0395	3.72
	Czech Republic	$0.1170	$0.0339	3.45
	Hungary	$0.1350	$0.0410	3.29
	Slovakia	$0.1115	$0.0564	1.98
	Bulgaria	$0.1150	$0.0600	1.92
	Slovenia	$0.1350	$0.0710	1.90
	Latvia	$0.1485	$0.0965	1.54
	Yugoslavia	$0.1330	$0.0963	1.38
	Albania	$0.1025	$0.0950	1.08
	Romania	$0.1160	$0.1080	1.07
	Belarus	$0.1600	$0.1600	1.00
	Russia	$0.0515	$0.0550	0.94
	Ukraine	$0.0749	$0.0825	0.91
Asia-Pacific				
Asia:				
	Japan	$0.1300	$0.0228	5.70
	Korea (South)	$0.0690	$0.0215	3.21
	Thailand	$0.1010	$0.0850	1.19
	Malaysia	$0.0295	$0.0250	1.18
	China	$0.0250	$0.0240	1.04
	Singapore	$0.0145	$0.0140	1.04
	Hong Kong SAR	$0.0160	$0.0160	1.00
Oceania:	Australia	$0.1520	$0.0170	8.94
	New Zealand	$0.1230	$0.0188	6.54

Mobile and Fixed Settlement Rates
Sorted by Mobile/Fixed Ratio

Region	Country	Mobile ($/Min)	Fixed ($/Min)	Mobile/Fixed Ratio
South America				
Caribbean:				
	Haiti	$0.2425	$0.1555	1.56
	Jamaica	$0.1525	$0.1321	1.15
	Barbados	$0.1490	$0.1340	1.11
	Trinidad & Tobago	$0.1150	$0.1040	1.11
	Cuba	$0.5440	$0.5295	1.03
	Auguilla	$0.1796	$0.1750	1.03
	Saint Vincent	$0.1910	$0.1910	1.00
N. & Central America:				
	Guatemala	$0.1300	$0.1150	1.13
South America:				
	Chile	$0.1200	$0.0229	5.24
	Peru	$0.1800	$0.0945	1.90
	Venezuela	$0.1855	$0.1150	1.61
	Paraguay	$0.1920	$0.1400	1.37
	Brazil	$0.0850	$0.0624	1.36
	Ecuador	$0.1200	$0.1050	1.14
	Bolivia	$0.1849	$0.1680	1.10
	Colombia	$0.0743	$0.0740	1.00
	Uruguay	$0.1630	$0.1650	0.99
Africa				
	South Africa	$0.1385	$0.0620	2.23
	Zimbabwe	$0.0545	$0.0470	1.16
	Sao Tome	$0.6100	$0.5740	1.06
	Morocco	$0.1900	$0.1820	1.04
	Zambia	$0.0950	$0.0950	1.00
	Madagascar	$0.1400	$0.1425	0.98

Source: International Telecommunications Users Group (INTUG) Data on Mobile and Fixed Settlement Rates (2002)

Appendix E

Table 1

Residential Mobile Surcharges by Region
As of 9/14/2004

Surcharge Range	No. of Countries	Region Distribution 1	2	3	4	5	6	7	8	9	10	Group Sum
(1) Surcharge >=$0.0 but < $0.02	46	2	22	5	1	2	1	10	1	2	0	46
(2) Surcharge >=$0.02 but < $0.05	28	0	9	3	2	2	0	7	0	5	0	28
(3) Surcharge >=$0.5 but < $0.10	37	2	8	3	8	3	3	2	1	6	1	37
(4) Surcharge >=$0.10 but < $0.15	11	2	1	0	0	1	2	1	0	4	0	11
(5) Surcharge >=$0.15 but < $0.20	26	13	1	0	3	0	4	0	1	4	0	26
(6) Surcharge >=$0.20 but < $0.25	11	8	1	0	0	0	0	0	1	1	0	11
(7) Surcharge >=$0.25	2	1	0	0	0	0	1	0	0	0	0	2
Total countries with surcharges	161	28	42	11	14	8	11	20	4	22	1	161
Total countries without surcharges	67	0	17	3	9	2	2	9	17	5	3	67
Total countries count (w/o U.S. Territories)	228	28	59	14	23	10	13	29	21	27	4	228
Countries with surcharges as % of total in the region		100.0%	71.2%	78.6%	60.9%	80.0%	84.6%	69.0%	19.0%	81.5%	25.0%	70.6%

Region Code:

1	Western Europe
2	Africa
3	Middle East
4	Caribbean
5	North and Central America
6	South America
7	Asia
8	Oceania
9	Eastern Europe
10	Other Regions

Table 2

Residential Mobile Surcharges (2004)
Sorted by Alphabetical Order

No.	International Point	Region Code *	U.S. Carriers Average Mobile Surcharge ** (2004)	AT&T Mobile Surcharge (7/23/04)	MCI Mobile Surcharge (10/01/04)	Sprint Mobile Surcharge (9/13/04)	Verizon Mobile Surcharge (9/13/04)
1	Afghanistan	7	$0.013	$0.00	$0.04	$0.01	$0.00
2	Albania	9	$0.040	$0.05	$0.06	$0.05	$0.00
3	Algeria	2	$0.028	$0.03	$0.01	$0.03	$0.04
4	American Samoa	8	$0.003	$0.01	$0.00	$0.00	$0.00
5	Andorra	1	$0.148	$0.13	$0.19	$0.16	$0.11
6	Angola	2	$0.035	$0.05	$0.05	$0.04	$0.00
7	Antarctica	10	$0.055	$0.00	$0.22	$0.00	$0.00
8	Argentina	6	$0.170	$0.18	$0.17	$0.17	$0.16
9	Armenia	9	$0.090	$0.13	$0.12	$0.11	$0.00
10	Aruba	4	$0.065	$0.11	$0.06	$0.09	$0.00
11	Australia	8	$0.183	$0.18	$0.22	$0.18	$0.15
12	Austria	1	$0.233	$0.25	$0.21	$0.27	$0.20
13	Azerbaijan	9	$0.018	$0.03	$0.02	$0.02	$0.00
14	Bahamas, The	4	$0.003	$0.00	$0.01	$0.00	$0.00
15	Bahrain	3	$0.028	$0.07	$0.02	$0.00	$0.02
16	Bangladesh	7	$0.005	$0.00	$0.00	$0.00	$0.02
17	Barbados	4	$0.068	$0.10	$0.07	$0.10	$0.00
18	Belgium	1	$0.193	$0.19	$0.19	$0.21	$0.18
19	Belize	5	$0.080	$0.12	$0.08	$0.12	$0.00
20	Benin	2	$0.003	$0.00	$0.01	$0.00	$0.00
21	Bhutan	7	$0.028	$0.00	$0.11	$0.00	$0.00
22	Bolivia	6	$0.060	$0.08	$0.00	$0.08	$0.08
23	Bosnia and Herzegovina	9	$0.045	$0.04	$0.08	$0.06	$0.00
24	Botswana	2	$0.010	$0.00	$0.01	$0.03	$0.00
25	Brazil	6	$0.123	$0.13	$0.10	$0.14	$0.12
26	Brunei	7	$0.015	$0.02	$0.00	$0.02	$0.02
27	Bulgaria	9	$0.163	$0.20	$0.14	$0.21	$0.10
28	Burkina	2	$0.005	$0.00	$0.02	$0.00	$0.00
29	Burundi	2	$0.003	$0.00	$0.01	$0.00	$0.00
30	Cameroon	2	$0.013	$0.03	$0.00	$0.02	$0.00
31	Canary Island	2	$0.045	$0.00	$0.00	$0.00	$0.18
32	Cayman Islands	4	$0.070	$0.08	$0.07	$0.13	$0.00
33	Central African Republic	2	$0.028	$0.00	$0.00	$0.11	$0.00
34	Chad	2	$0.005	$0.00	$0.02	$0.00	$0.00
35	Chile	6	$0.160	$0.16	$0.16	$0.17	$0.15
36	China	7	$0.023	$0.03	$0.00	$0.04	$0.02
37	Colombia	6	$0.063	$0.15	$0.00	$0.06	$0.04
38	Comoros	2	$0.095	$0.00	$0.38	$0.00	$0.00
39	Congo	2	$0.008	$0.01	$0.00	$0.02	$0.00
40	Congo DRC	2	$0.073	$0.22	$0.07	$0.00	$0.00
41	Costa Rica	5	$0.003	$0.00	$0.00	$0.01	$0.00
42	Cote d'Ivoire	2	$0.033	$0.05	$0.04	$0.04	$0.00
43	Croatia	9	$0.098	$0.15	$0.00	$0.16	$0.08
44	Cyprus	1	$0.065	$0.04	$0.03	$0.06	$0.13
45	Czech Republic	9	$0.128	$0.13	$0.13	$0.14	$0.11
46	Denmark	1	$0.165	$0.17	$0.16	$0.18	$0.15
47	Dominica	4	$0.070	$0.09	$0.08	$0.11	$0.00
48	Dominican Republic	4	$0.055	$0.07	$0.07	$0.08	$0.00
49	Ecuador	6	$0.018	$0.02	$0.00	$0.02	$0.03
50	Egypt	2	$0.020	$0.00	$0.00	$0.04	$0.04